



TEST REPORT RAPPORTO DI PROVA

DEGREES OF PROTECTION PROVIDED BY ENCLOSURES (IP55) on SOCKET BOX (two installation modes: wall/ built in mounting) VERIFICA DEL GRADO DI PROTEZIONE (IP55) su CALOTTA PRESA (due modalità di installazione: fissaggio a muro o ad incasso)

Customer (Richiedente):

- Dept./Firm (Ente/Società): 4 BOX S.r.l.
- Mr./Mrs (Sig./Sig.ra.): Pietro Malanca
P.le Segesta 15
- Address (Indirizzo): 20148 Milano

Test Request Form no.:
Modulo Richiesta Prova n.:
919042

Test Report sent to:
Rapporto inviato a:
Pietro Malanca

Name and Signature of the test engineer:
Nome e Firma esecutore prova:
Mauro Allamanno

Name and Signature of the Technical reviewer:
Nome e Firma del Revisore tecnico:
Matteo Enrico Piacentino

Date of test samples receipt:
Data ricevimento campioni:
28/06/2017

Date of test execution:
Data esecuzione prove:
From 28/06/2017 to 10/07/2017

Site of test execution (if different from the address in the footer):
Località esecuzione prove (se diversa dal piè pagina):

Witness to the test:
Presenti alle prove:
Giuseppe Sanfratello
(Urmet S.p.a.)

I risultati del presente rapporto di prova si riferiscono esclusivamente al campione sottoposto a prova.
The test results contained in this Test report relate to the tested samples only.

E' ammessa la riproduzione integrale del presente Rapporto di prova da parte del Richiedente; la riproduzione parziale dev'essere autorizzata per iscritto dal Laboratorio.
The integral reproduction of the present Test report is allowed; the partial reproduction must be authorized in writing by the Lab.

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Document name: CLI919042A_REV00.doc Issue date: 10/07/2017

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1 TEST SETUP

SETUP DI PROVA

1.1 IDENTIFICAZIONE CAMPIONE

SAMPLE IDENTIFICATION

1.1.1 Product/material subjected to test: <i>Prodotto/materiale sottoposto a prova:</i>	Electrical equipment
1.1.2 Description: <i>Descrizione:</i>	Socket box
1.1.3 Level (Series product, prototype, etc.): <i>Livello (Prodotto di serie, prototipo, ecc.):</i>	Prototype
1.1.4 Part number: <i>Codice prodotto:</i>	None
1.1.5 Serial number: <i>N° Matricola:</i>	None
1.1.6 Sample identification code: <i>Codice di identificazione</i>	298893
1.2 AUXILIARY DEVICES <i>DISPOSITIVI AUSILIARI</i>	None
1.3 TEST CONFIGURATION <i>CONFIGURAZIONE DI PROVA</i>	Test execution only
1.4 DIAGNOSTIC SYSTEM <i>SISTEMA DIAGNOSTICO</i>	Naked eye visual internal inspection after IP55 test

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2 TEST LIST

ELENCO DELLE PROVE

Test Description	Method	Standardized	Differencies
2.1 TEST FOR FIRST CHARACTERISTIC NUMERAL 5 category 2 PROVA PER LA PRIMA CIFRA CARATTERISTICA NUMERO 5 categoria 2	CEI EN 60529:1997/A2:2014	Yes	None
2.2 TEST FOR SECOND CHARACTERISTIC NUMERAL 5 PROVA PER LA SECONDA CIFRA CARATTERISTICA NUMERO 5	CEI EN 60529:1997/A2:2014	Yes	None

3 TEST EQUIPMENT USED

APPARECCHIATURE UTILIZZATE

Description	Manufacturer	Model	Serial no./ID	Used in test n.:
Dust chamber	Aster	/	1246 02_POL	2.1
Test finger	Attrezzature Tecniche Speciali Galbusera	01.12	123/16 13_DIT	2.1
Demineralizer	Nobel	RO201D	47822- 2016 102_DEM	2.2
Water flowmeter	Parker	1 ÷ 15 l/min	16_FLU	2.2
Nozzle Ø 6,3 mm for IPX5 test flow 12,5 l/min	Attrezzature Tecniche Speciali Galbusera	03.22	36_UGE	2.2
Mark for IPX5 test	Attrezzature Tecniche Speciali Galbusera	0322-1-009	IPX5 70_BRG	2.2
IP Tank	P.P.E.	Tank1000	23_VAS	2.2
Thermohygrometer	Gemini	Tinytag View2 TV-4500	673720 TIG_167	2.2
Thermometer with probe	Blinky	Model: SH-102 Code: 95885-10/0	1207R02745 TIG_168	2.2
Digital chronometer	Han hart	Magma Pro Model: 237.1952-00	240910 CRN_36	2.2
Flexometer	Usag	981 G	14/576 FLE_179	2.2

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4 ENVIRONMENTAL CONDITIONS

CONDIZIONI AMBIENTALI

4.1 ROOM TEMPERATURE

TEMPERATURA AMBIENTE

23 °C ± 2,3 °C

4.2 RELATIVE HUMIDITY

UMIDITA' RELATIVA

48 % ± 7 %

5 MEASUREMENT UNCERTAINTY

INCERTEZZA DI MISURA

Measurement uncertainties was estimated as expanded uncertainty obtained multiplying the standard uncertainty by the coverage factor k corresponding to a confidence level of about 95%. Declared uncertainties are obtained with factor k=2 except if otherwise specified.

Measurement	Expanded uncertainty	Found in test n.:
Water flow	± 0,5 l/min	2.2
Time	± 0,58 s	2.1-2.2
Lenght	± 7,2 mm	2.2
Force	± 0,1 N	2.1

6 SAMPLING PLAN

PIANO DI CAMPIONAMENTO

Samples selected by the customer.



7 TEST AND/OR MEASUREMENT RESULTS

RISULTATI DELLE PROVE E/O MISURE

7.1 TEST FOR FIRST CHARACTERISTIC NUMERAL 5 category 2

PROVA PER LA PRIMA CIFRA CARATTERISTICA NUMERO 5 categoria 2

7.1.1 TEST OBJECTIVE

SCOPO DELLA PROVA

Test performed in order to verify the degree of protection provided by the enclosures (IP5X)

7.1.2 TEST DESCRIPTION

DESCRIZIONE DELLA PROVA

The test wire ($\varnothing = 1$ mm described in Tab. 3 of the reference standard CEI EN 60529:1997-06) is pushed with a force of 1 N through any openings of the enclosures of the Es.U.T.

The devices under test, were inserted in the dust chamber as described to CEI EN 60529:1997-06 – standard, capable to circulate in suspension an amount of 2 kg/m³ of talcum powder.

This powder shall be able to pass through a square-meshed sieve the nominal wire diameter of which is 50 μ m and the nominal width between wires 75 μ m.

The percentage of the talcum powder granules is the following:

> 45 μ m	: 0.5 % max
< 40 μ m	: 99 % max
< 30 μ m	: 94 % max
< 20 μ m	: 80 % max
< 10 μ m	: 47 % max
< 5 μ m	: 23 % max
< 2 μ m	: 8 % max

Test duration: 8 hrs

7.1.3 TEST RESULTS

RISULTATI DI PROVA

The test wire is not penetrated inside the enclosures.

At the end of test, a visual inspection was made: **NO POWDER WAS FOUND inside the enclosures** (see photo at § 9.1).

The samples **can be classified IP5X degree in both configurations.**

The requirements specified in the §13.3 §13.5 of the CEI EN 60529:1997 were satisfied.

The criteria by which the results are expressed are given in the standards and/or in the client specification listed in paragraph 2 of this technical report.

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7.2 TEST FOR SECOND CHARACTERISTIC NUMERAL 5

PROVA PER LA SECONDA CIFRA CARATTERISTICA NUMERO 5

7.2.1 TEST OBJECTIVE

SCOPO DELLA PROVA

Test performed in order to verify the degree of protection provided by the enclosures (IPX5).

7.2.2 TEST DESCRIPTION

DESCRIZIONE DELLA PROVA

The devices under test were sprayed from all practicable direction with a stream of water from a standard nozzle of CEI EN 60529:1997-06 - standard.

The observed conditions were as follows:

- Internal diameter of nozzle: 6,3 mm
- Delivery rate: 12,5 l/min \pm 5%
- Water pressure: adjusted to achieve the specific delivery rate
- Core of the substantial stream: circle of approximately 40 mm diameter at 2,5 m distance from nozzle
- Distance from nozzle to enclosure surface: between 2,5 and 3 m.
- Test duration: 3 min.

7.2.3 TEST RESULTS

RISULTATI DI PROVA

At the end of test, a naked eye visual internal inspection was made: **SMALL WATER TRACE WAS FOUND inside the enclosures but not in significant amount** (see photo at § 9.1).

The samples **can be classified IPX5 degree in both configurations.**

The requirements specified in the §14.3 of the CEI EN 60529:1997 standard were satisfied.

The criteria by which the results are expressed are given in the standards and/or in the client specification listed in paragraph 2 of this technical report.

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8 REMARKS

NOTE

The configuration has been supplied by the customer.

La configurazione e' stata fornita dal cliente

The customer is responsible for the paragraph 1.1 reported data and for the configuration of the tested EUT.

Il cliente e' responsabile per i dati riportati al paragrafo 1.1 (Identificazione campione) e per la configurazione dell'EUT testato

Water temperature 22 °C sample temperature 24 °C

Temperatura dell'acqua pari a 22 °C, temperatura del campione pari a 24 °C

The samples under test were returned to the customer.

I campioni testati sono stati restituiti al cliente.

9 APPENDIX

APPENDICE

None

9.1 PHOTO DOCUMENTATION

DOCUMENTAZIONE FOTOGRAFICA

*IP 5X category 2 test (wire test)
on wall mounting box*



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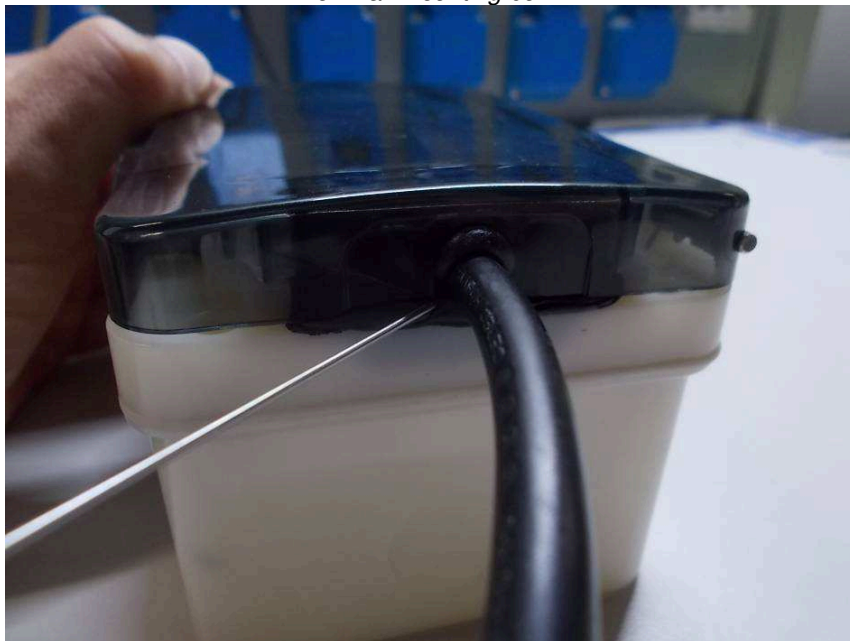
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*IP 5X category 2 test (wire test)
on wall mounting box*



*IP 5X category 2 test
on wall mounting box*



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Wall mounting box after
IP 5X category 2 test



Naked eye visual internal inspection on wall mounting box
after IP5X category 2 test



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*IP 5X category 2 test (wire test)
on built in mounting box*



*IP 5X category 2 test (wire test)
on built in mounting box*



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*IP 5X category 2 test
on built in mounting box*



*IP 5X category 2 test
on built in mounting box*



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Naked eye visual internal inspection on built in mounting box
after IP5X category 2 test



Naked eye visual internal inspection on built in mounting box
after IP5X category 2 test



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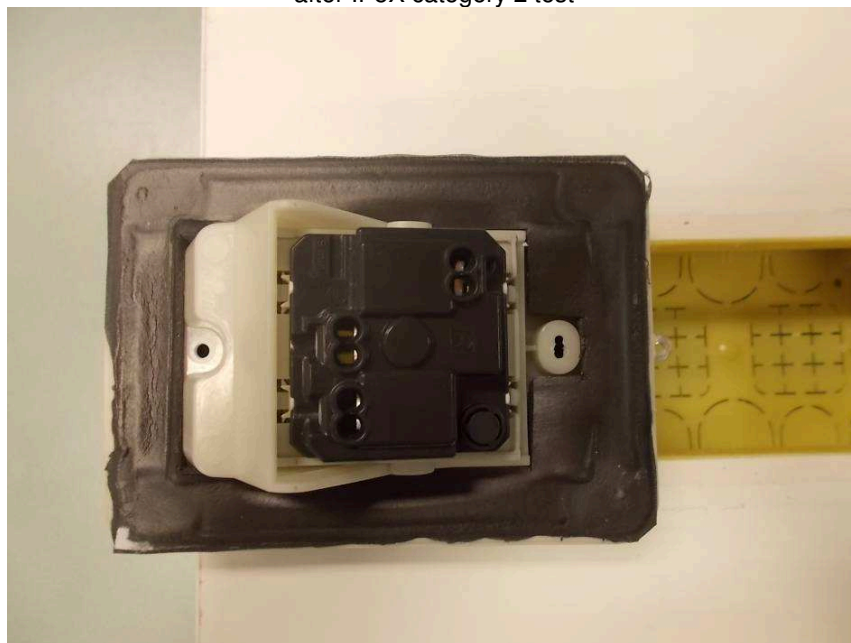
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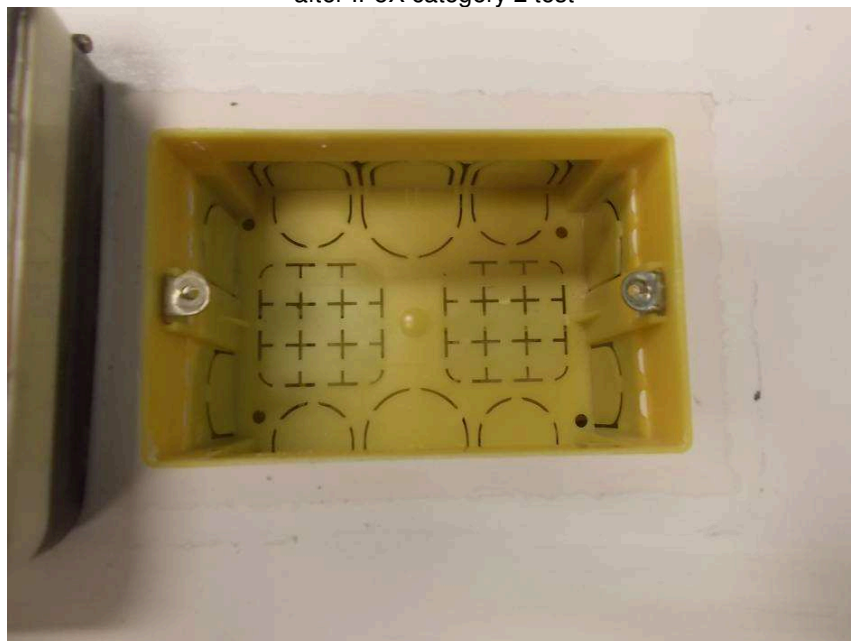
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Naked eye visual internal inspection on built in mounting box
after IP5X category 2 test



Naked eye visual internal inspection on built in mounting box
after IP5X category 2 test



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*IP X5 test
on wall mounting box*



Naked eye visual internal inspection after IPX5 test on wall mounting box



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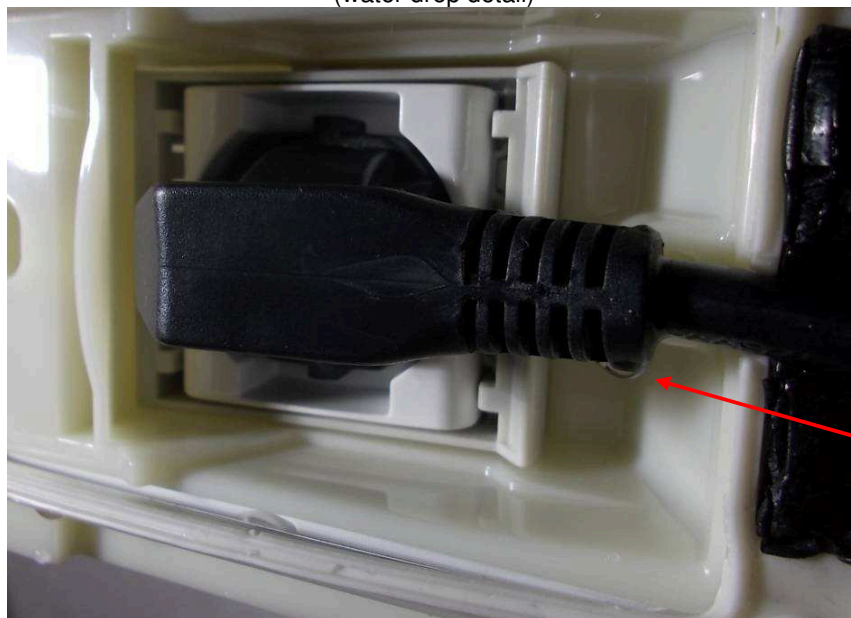
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Naked eye visual internal inspection after IPX5 test on wall mounting box
(water drop detail)



*IP X5 test
on built in mounting box*



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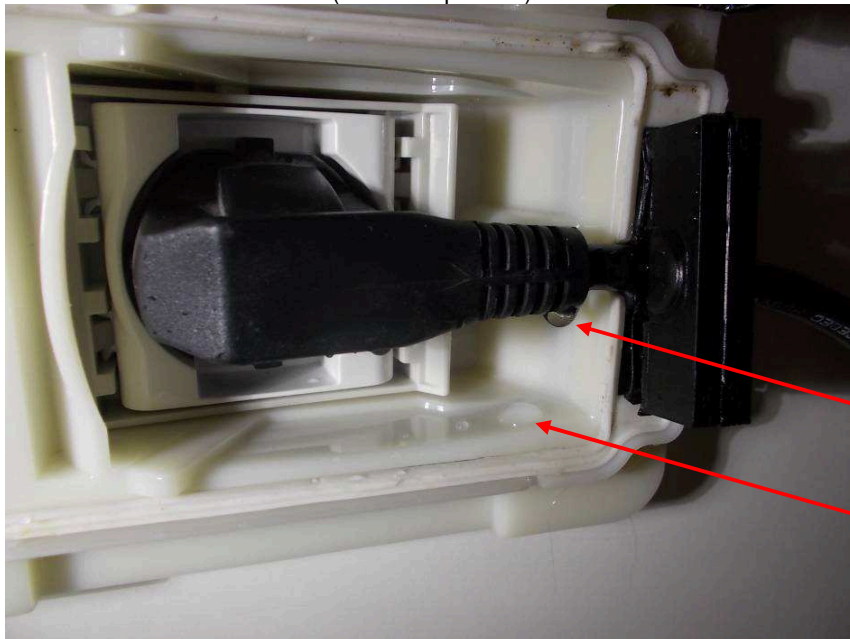
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Naked eye visual internal inspection after IPX5 test on built in mounting box



Naked eye visual internal inspection after IPX5 test on built in mounting box
(water drop detail)



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Naked eye visual internal inspection after IPX5 test on built in mounting box



Naked eye visual internal inspection after IPX5 test on built in mounting box



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9.2 ATTACHMENTS

ALLEGATI

None

10 SUMMARY

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